

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for pacing an image reader at a constant scanning speed comprising:

providing a carriage having a light source lamp traveling along an original on a platen glass, to scan ~~[[an]]~~ the original with light beams irradiated from the light source lamp;

reading an image formed on the original by detecting light beams reflected from the original and guiding the light beams to ~~[[the]]~~ a light receptor; and

supplying a drive motor for the carriage with a two-phase current for the carriage to travel, which current value can be adjusted at each phase of the two-phase current to provide a constant scanning speed, and wherein the two-phase current is adjusted responsive to a speed fluctuation of the drive motor.

2. (Original) A method for pacing an image reader at a constant scanning speed according to claim 1 in which either one current value of the two-phase current is variable to adjust the current value between the two phases.

3. (Currently Amended) A method for pacing an image reader at a constant scanning speed according to claim 1 and further including detecting speed fluctuations at the drive motor to determine the current values at each phase based on the detected ~~result~~ speed fluctuations.

4. (Currently Amended) A method for pacing an image reader at a constant scanning speed according to claim 2 and further including detecting speed fluctuations at the drive motor to determine the current values at each phase based on the detected ~~result~~ speed fluctuations.

5. (Currently Amended) ~~A method for pacing an image reader at a constant scanning speed according to claim 3 and further including the step of~~ A method for pacing an image reader at a constant scanning speed comprising:

providing a carriage having a light source lamp traveling along an original on a platen glass, to scan the original with light beams irradiated from the light source lamp;

reading an image formed on the original by detecting light beams reflected from the original and guiding the light beams to a light receptor;

supplying a drive motor for the carriage with a two-phase current for the carriage to travel, which current value can be adjusted at each phase of the two-phase current to provide a constant scanning speed; and

running a tentative scan to detect speed fluctuations at the drive motor during the tentative scan to determine the current values at each phase of the two-phase current, based on the detected ~~result~~ speed fluctuations, before making a definitive scan to obtain image data.

6. (Currently Amended) ~~A method for pacing an image reader at a constant scanning speed according to claim 4 and further including the step of~~ A method for pacing an image reader at a constant scanning speed comprising:

providing a carriage having a light source lamp traveling along an original on a platen glass, to scan the original with light beams irradiated from the light source lamp;

reading an image formed on the original by detecting light beams reflected from the original and guiding the light beams to a light receptor;

supplying a drive motor for the carriage with a two-phase current for the carriage to travel, which current value can be adjusted and either one current value of the two-phase current is variable to adjust the current value between the two phases to provide a constant scanning speed; and

running a tentative scan to detect speed fluctuations at the drive motor during the tentative scan to determine the current values at each phase of the two-phase current, based on the detected ~~result~~ speed fluctuations, before making a definitive scan to obtain image data.

7. (Currently Amended) A method for pacing an image reader at a constant scanning speed according to claim [[1]] 3 wherein the detecting step detects speed fluctuations to determine the current values at each phase of the two-phase current.

8. (Currently Amended) A method for pacing an image reader at a constant scanning speed according to claim [[2]] 4 wherein the detecting step detects speed fluctuations to determine the current values at each phase of the two-phase current.

9. (Currently Amended) ~~A method for pacing an image reader at a constant scanning speed according to claim 1~~ A method for pacing an image reader at a constant scanning speed comprising:

providing a carriage having a light source lamp traveling along an original on a platen glass, to scan the original with light beams irradiated from the light source lamp;

reading an image formed on the original by detecting light beams reflected from the original and guiding the light beams to a light receptor;

supplying a drive motor for the carriage with a two-phase current for the carriage to travel, which current value can be adjusted at each phase of the two-phase current to provide a constant scanning speed; and

detecting speed fluctuations at the drive motor to determine the current values at each phase based on the detected speed fluctuations, wherein the detecting step detects speed fluctuations at the carriage during a tentative scan to adjust the current value at each phase of the two-phase current, based on the detected result speed fluctuations, before making a definitive scan to obtain image data.

10. (Currently Amended) ~~A method for pacing an image reader at a constant scanning speed according to claim 2~~ A method for pacing an image reader at a constant scanning speed comprising:

providing a carriage having a light source lamp traveling along an original on a platen glass, to scan the original with light beams irradiated from the light source lamp;

reading an image formed on the original by detecting light beams reflected from the original and guiding the light beams to a light receptor;

supplying a drive motor for the carriage with a two-phase current for the carriage to travel, which current value can be adjusted and either one current value of the two-phase current is variable to adjust the current value between the two phases to provide a constant scanning speed; and

detecting speed fluctuations at the drive motor to determine the current values at each phase based on the detected speed fluctuations, wherein the detecting step detects speed fluctuations at the carriage during a tentative scan to adjust the current value at each phase of the two-phase current, based on the detected result speed fluctuations, before making a definitive scan to obtain image data.

11. (Currently Amended) A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original, detecting light beams reflected from the original to guide the light beams to ~~[[the]]~~ a light receptor to read out an image formed on the original comprising:

an image ~~reading~~ reader including a drive motor supplied with two-phase current for the carriage; and

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan, wherein the two-phase current is adjusted responsive to a speed fluctuation of the drive motor.

12. (Original) A device for pacing an image reader at a constant scanning speed according to claim 11 and including a motor current detecting resistor at either phase of the drive circuit, wherein at least one of said resistors is a variable resistor and the current value is adjusted by changing the resistance value of said variable resistor.

13. (Original) A device for pacing an image reader at a constant scanning speed according to claim 11 and further including a reference voltage source and wherein the two-phase current for the drive motor to work is adjusted in current value by changing the motor current value setting reference voltage supplied on a phase-by-phase basis from a control circuit to the drive circuit.

14. (Currently Amended) A device for pacing an image reader at a constant scanning speed according to claim 11, ~~wherein said~~ further comprising:

a control circuit, wherein the control circuit includes one current value setting reference voltage supplied to ~~[[a]]~~ the drive circuit coupled to said control circuit and to the respective phases of the drive motor and a voltage divider coupled to said reference

voltage in order to adjust the current value at least at either phase of the two-phase current for the drive motor to work by changing the voltage divider.

15. (Currently Amended) A device for pacing an image reader at a constant scanning speed according to claim 11 including a speed fluctuation detecting means to detect speed fluctuations at the drive motor to change current values at each phase of the two-phase current, based on the ~~result~~-speed fluctuations detected by the speed ~~fluctuations~~-fluctuation detecting means.

16. (Currently Amended) A device for pacing an image reader at a constant scanning speed according to claim 12 including a speed fluctuation detecting means to detect speed fluctuations at the drive motor to change current values at each phase of the two-phase current, based on the ~~result~~-speed fluctuations detected by the speed ~~fluctuations~~-fluctuation detecting means.

17. (Currently Amended) A device for pacing an image reader at a constant scanning speed according to claim 13 including a speed fluctuation detecting means to detect speed fluctuations at the drive motor to change current values at each phase of the two-phase current, based on the ~~result~~-speed fluctuations detected by the speed ~~fluctuations~~-fluctuation detecting means.

18. (Currently Amended) A device for pacing an image reader at a constant scanning speed according to claim 14 including a speed fluctuation detecting means to detect speed ~~fluctuations~~-fluctuation at the drive motor to change current values at each phase of the two-phase current, based on the ~~result~~-speed fluctuations detected by the speed fluctuations detecting means.

19. (Currently Amended) ~~A device for pacing an image reader at a constant scanning speed according to claim 12~~ A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original, detecting light beams reflected from the original to guide the light beams to a light receptor to read out an image formed on the original comprising:

an image reader including a drive motor supplied with two-phase current for the carriage;

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan; and

a motor current detecting resistor at either phase of the drive circuit, wherein at least one of said resistors is a variable resistor and the current value is adjusted by changing the resistance value of said variable resistor, wherein a tentative scan is tried to detect speed fluctuations at the drive motor and to adjust the current value at each phase of the two-phase current, based on the detected result speed fluctuations, before a definitive scan to obtain image data is run.

20. (Currently Amended) ~~A device for pacing an image reader at a constant scanning speed according to claim 13~~ A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original, detecting light beams reflected from the original to guide the light beams to a light receptor to read out an image formed on the original comprising:

an image reader including a drive motor supplied with two-phase current for the carriage;

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan; and

a reference voltage source, wherein the two-phase current for the drive motor to work is adjusted in current value by changing the motor current value setting reference voltage supplied on a phase-by-phase basis from a control circuit to the drive circuit, and wherein a tentative scan is tried to detect speed fluctuations at the drive motor and to adjust the current value at each phase of the two-phase current, based on the detected result speed fluctuations, before a definitive scan to obtain image data is run.

21. (Currently Amended) ~~A device for pacing an image reader at a constant scanning speed according to claim 14~~ A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original, detecting light beams reflected from the original to guide the light beams to a light receptor to read out an image formed on the original comprising:

an image reader including a drive motor supplied with two-phase current for the carriage;

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan; and

a control circuit which includes one current value setting reference voltage supplied to said drive circuit coupled to said control circuit and to the respective phases of the drive motor and a voltage divider coupled to said reference voltage in order to adjust the current value at least at either phase the two-phase current for the drive motor to work by changing the voltage divider, wherein a tentative scan is tried to detect speed fluctuations at the drive motor and to adjust the current value at each phase of the two-phase current, based on the detected result speed fluctuations, before a definitive scan to obtain image data is run.

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22. (Currently Amended) ~~A device for pacing an image reader at a constant scanning speed according to claim 15~~ A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original, detecting light beams reflected from the original to guide the light beams to a light receptor to read out an image formed on the original comprising:

an image reader including a drive motor supplied with two-phase current for the carriage;

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan; and

a speed fluctuation detecting means to detect speed fluctuations at the drive motor, wherein a tentative scan is tried to detect speed fluctuations at the drive motor and to adjust the current value at each phase of the two-phase current, based on the detected result speed fluctuations, before a definitive scan to obtain image data is run.

23. (Currently Amended) ~~A device for pacing an image reader at a constant scanning speed according to claim 11 and further including~~ A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original, detecting light beams reflected from the original to guide the light beams to a light receptor to read out an image formed on the original comprising:

an image reader including a drive motor supplied with two-phase current for the carriage;

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan; and

a test chart, placed on the platen glass or on the underside of the top plate of the housing to avoid any harm in obtaining image data of [[an]] the original, and a tentative

scan is run to obtain image data for measurement from said test chart during the tentative scan, to detect speed fluctuations at the carriage provided with the light source lamp from the image data for measurement, and the current value at each phase of the two-phase current is adjusted based upon the detected ~~result~~ speed fluctuations, before a definitive scan to obtain image data is run.

24. (Currently Amended) ~~A device for pacing an image reader at a constant scanning speed according to claim 12 and further including~~ A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original, detecting light beams reflected from the original to guide the light beams to a light receptor to read out an image formed on the original comprising:

an image reader including a drive motor supplied with two-phase current for the carriage;

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan;

a motor current detecting resistor at either phase of the drive circuit, wherein at least one of said resistors is a variable resistor and the current value is adjusted by changing the resistance value of said variable resistor; and

a test chart, placed on the platen glass or on the underside of the top plate of the housing to avoid any harm in obtaining image data of ~~[[an]]~~ the original, and a tentative scan is run to obtain image data for measurement from said test chart during the tentative scan, to detect speed fluctuations at the carriage provided with the light source lamp from the image data for measurement, and the current value at each phase of the two-phase current is adjusted based upon the detected ~~result~~ speed fluctuations, before a definitive scan to obtain image data is run.

25. (Currently Amended) ~~A device for pacing an image reader at a constant scanning speed according to claim 13 and further including~~ A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original, detecting light beams reflected from the original to guide the light beams to the a light receptor to read out an image formed on the original comprising:

an image reader including a drive motor supplied with two-phase current for the carriage;

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan;

a reference voltage source, wherein the two-phase current for the drive motor to work is adjusted in current value by changing the motor current value setting reference voltage supplied on a phase-by-phase basis from a control circuit to the drive circuit;
and

a test chart, placed on the platen glass or on the underside of the top plate of the housing to avoid any harm in obtaining image data of ~~[[an]]~~ the original, and a tentative scan is run to obtain image data for measurement from said test chart during the tentative scan, to detect speed fluctuations at the carriage provided with the light source lamp from the image data for measurement, and the current value at each phase of the two-phase current is adjusted based upon the detected ~~result~~ speed fluctuations, before a definitive scan to obtain image data is run.

26. (Currently Amended) ~~A device for pacing an image reader at a constant scanning speed according to claim 14 and further including~~ A device for pacing an image reader at a constant scanning speed of a carriage provided with a light source lamp traveling along an original on a platen glass, while irradiating light beams to scan the original,

detecting light beams reflected from the original to guide the light beams to a light receptor to read out an image formed on the original comprising:

an image reader including a drive motor supplied with two-phase current for the carriage;

a drive circuit for adjusting the current value at each phase of the two-phase current to provide a constant carriage speed during a scan;

a control circuit which includes one current value setting reference voltage supplied to the drive circuit coupled to said control circuit and to the respective phases of the drive motor and a voltage divider coupled to said reference voltage in order to adjust the current value at least at either phase of the two-phase current for the drive motor to work by changing the voltage divider; and

a test chart, placed on the platen glass or on the underside of the top plate of the housing to avoid any harm in obtaining image data of ~~[[an]]~~ the original, and a tentative scan is run to obtain image data for measurement from said test chart during the tentative scan, to detect speed fluctuations at the carriage provided with the light source lamp from the image data for measurement, and the current value at each phase of the two-phase current is adjusted based upon the detected ~~result~~ speed fluctuations, before a definitive scan to obtain image data is run.

27. (Original) A device for pacing an image reader at a constant scanning speed according to claim 11 wherein the drive circuit of the drive motor is installed on a circuit substrate housed inside a cover to cover the light receptor which comprises cooling means to cool the circuit substrate.

28. (Original) A device for pacing an image reader at a constant scanning speed according to claim 12 wherein the drive circuit of the drive motor is installed on a circuit

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substrate housed inside a cover to cover the light receptor which comprises cooling means to cool the circuit substrate.

29. (Original) A device for pacing an image reader at a constant scanning speed according to claim 13 wherein the drive circuit of the drive motor is installed on a circuit substrate housed inside a cover to cover the light receptor which comprises cooling means to cool the circuit substrate.

30. (Original) A device for pacing an image reader at a constant scanning speed according to claim 14 wherein the drive circuit of the drive motor is installed on a circuit substrate housed inside a cover to cover the light receptor which comprises cooling means to cool the circuit substrate.

31. (Original) A device for pacing an image reader at a constant scanning speed according to claim 27 wherein the cooling means comprises at least one ventilation aperture formed on the cover at a part facing the light receptor to ventilate around the light receptor.

32. (Original) A device for pacing an image reader at a constant scanning speed according to claim 28 wherein the cooling means comprises at least one ventilation aperture formed on the cover at a part facing the light receptor to ventilate around the light receptor.

33. (Original) A device for pacing an image reader at a constant scanning speed according to claim 29 wherein the cooling means comprises at least one ventilation aperture formed on the cover at a part facing the light receptor to ventilate around the light receptor.

34. (Original) A device for pacing an image reader at a constant scanning speed according to claim 30 wherein the cooling means comprises at least one ventilation aperture formed on the cover at a part facing the light receptor to ventilate around the light receptor.

35. (Original) A device for pacing an image reader at a constant scanning speed according to claim 11 and further including cooling means comprising a drive IC for the drive motor spaced from a drive circuit substrate to assure ventilation between the drive IC and the drive circuit substrate.

36. (Original) A device for pacing an image reader at a constant scanning speed according to claim 31 and further including cooling means comprising a drive IC for the drive motor spaced from a drive circuit substrate to assure ventilation between the drive IC and the drive circuit substrate.

37. (Original) A device for pacing an image reader at a constant scanning speed according to claim 11 and further including vibration proofing means to prevent vibration at the drive motor from being transmitted to the light receptor.

38. (Original) A device for pacing an image reader at a constant scanning speed according to claim 37 wherein said vibration proofing means comprises a fixing screw to fix the cover to cover the light receptor, the fixing screw being fitted within a bushing made of elastic material.

39. (Original) A device for pacing an image reader at a constant scanning speed according to claim 37 wherein said vibration proofing means comprises a fixing tongue

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to fix the fixing screw fixing the cover to cover the light receptor, formed at the tip of an oscillatory supporting arm defined by a pair of slots.

40. (Original) A device for pacing an image reader at a constant scanning speed according to claim 37 wherein said vibration proofing means comprises a spindle arranged at some midpoint in transmission path from the drive motor to the light receptor in order to attenuate vibration.

41. (Original) A device for pacing an image reader at a constant scanning speed according to claim 38 wherein said vibration proofing means further comprises a spindle arranged at some midpoint in transmission path from the drive motor to the light receptor in order to attenuate vibration.

42. (Original) A device for pacing an image reader at a constant scanning speed according to claim 39 wherein said vibration proofing means further comprises a spindle arranged at some midpoint in transmission path from the drive motor to the light receptor in order to attenuate vibration.